STATE OF CALIFORNIA—HEALTH AND HUMAN SERVICES AGENCY GRAY DAVIS, Governc

DEPARTMENT OF HEALTH SERVICES
RADIOLOGIC HEALTH BRANCH
P.O. BOX 942732, MS-178
SACRAMENTO, CA 94234-7320
(916) 445-0931

January 15, 1999

P.D. Rutherford, Manager
Environmental Remediation
Boeing North American
Rocketdyne division
6633 Canoga Ave.
P.O. Box 7922
Canoga Park, CA 91309-7922

Dear Mr. Rutherford;

The Radiologic Health Branch (RHB) performed a confirmation survey of Building T030 located at the Rocketdyne Santa Susana Field Laboratory. This survey, along with a review of the results of a final survey performed by Rocketdyne and a verification survey performed by ORISE of Building T030, shows that the residual activity levels are well below the release limits specified in DECON1.

Therefore, the Radiologic Health Branch concurs that the Building T030 may be released for use without radiological restrictions.

If you have any questions or need further information please contact Mr. Roger Lupo at (916) 324-3731 or Mr. Steve Hsu at (916) 322-4797.

Sincerely,

Gerard Wong, Ph.D., Chief
Radioactive Material Licensing

Confirmatory Survey of Building T030
Santa Susana Field Laboratory
Boeing - Rocketdyne
Ventura County, California

Prepared By
Roger K. Lupo, Health Physicist

Radiation Assessment Unit
Radiologic Health Branch

Preparation Date: 1-7-99

Reviewed by: Pankaj R. Patel Date: 1/15/99

Survey of Building T030: September 13, 1995

Building T030 was constructed in 1958 and was used from 1690 through 1964 to house a Van deGraaf accelerator facility for the performance of activation experiments. In 1965, the facility was converted for use as an office building although the accelerator remained on-site in an unused condition until at least 1966. Sometime after 1966 the facility was surveyed, and tritium contamination was identified on the accelerator. The accelerator was removed and the facility released for other uses.

Reference Document(s):

1. "Radiological Survey of Shipping/Receiving and Old Accelerator Area - Buildings T641 and T030"; Energy Technology Engineering Center; DOE; Rocketdyne division, Boeing North America, Inc., J. A. Chapman, Doc. Number GEN-ZR-0007, 19 August 1988
2. "Final Radiological Survey Report For Building T030"; Energy Technology Engineering Center; DOE; Rocketdyne division, Boeing North America, Inc., E. R. McGinnis, Doc. Number 030-AR-0001; 22 January 1997.
3. "Verification Survey of the Interim Storage Facility, Buildings T030, T641, and T013"; ORISE; T.J. Vitkus; February 1996.

Survey Personnel:

Jeff Wong and Mike Montes

Survey Instruments:

Manufacture & Model	S/N	Probe/detector	S/N	Calibration date
Eberline ESP - 2	0410	44 - 9 G-M pancake	057995	4/6/95
Eberline ESP - 2	0410	44 - 10 NaI	038050	4/6/95
Ludlum model 18 analyzer	105775	44 - 9 G-M pancake	110029	2/10/95
Ludlum model 18 analyzer	105775	43 – 90 ZnS 100 cm^2	106313	2/10/95
Ludlum Micro R m-19	109936	Internal NaI	-------	12/14/94

Survey Report:

On September 13, 1995, Radiologic Health Branch (RHB) staff, Misters Jeff Wong and Mike Montes performed a confirmatory survey of Building T030. The inside of the structure was surveyed with a G-M pancake detector and a micro R rate meter. No elevated levels were found. Single point measurements for alpha and beta activity were performed and a swipe sample for the determination of removable gross alpha and gross beta activity was collected at selected locations on the floor and walls of Building T030. Swipe samples were also taken in room 101, the prior location of the Van deGraaf accelerator, for determination of removable tritium activity levels. Figure 1 shows the locations of the contact measurements and the swipe samples.

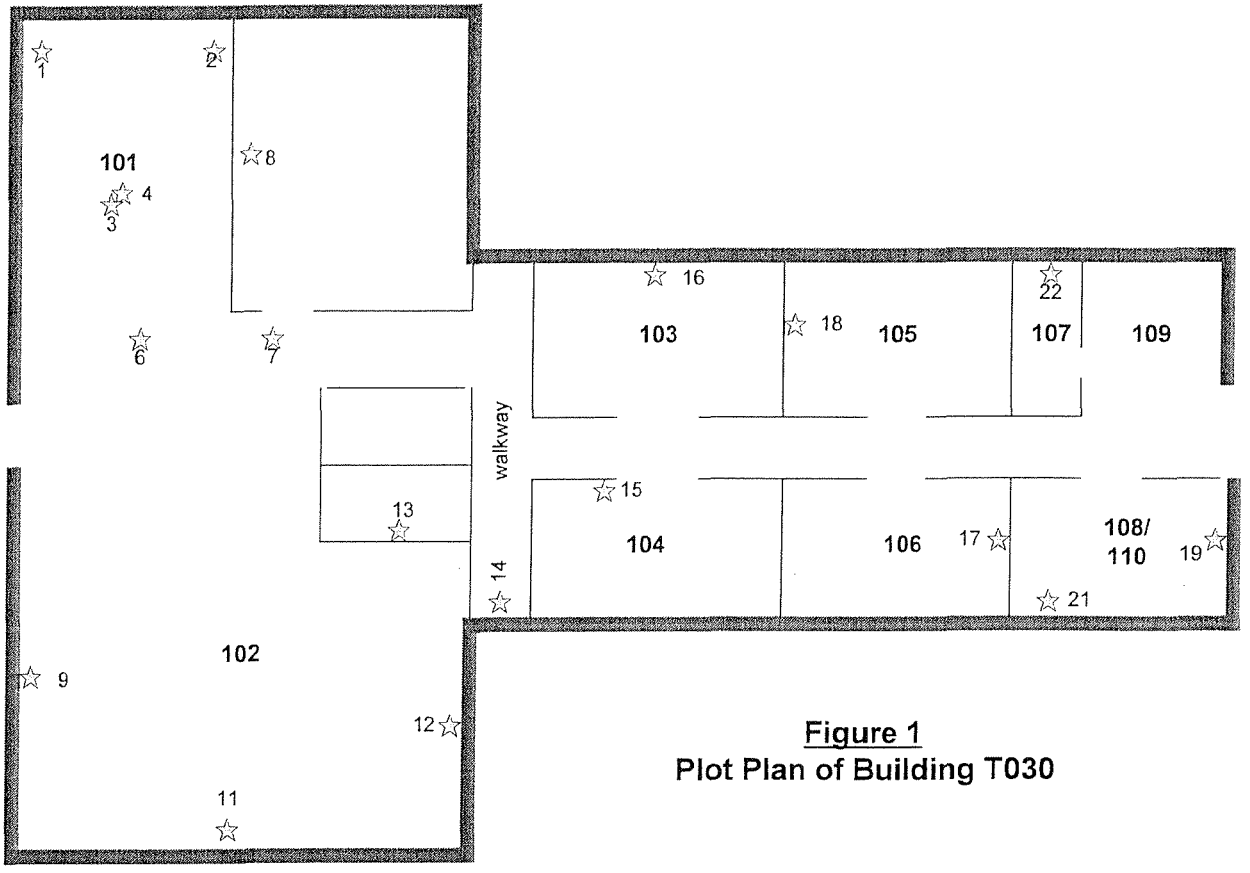

Figure 1
Plot Plan of Building T030

Table 1: Background Measurements:

Meter	Reading
Ludlum M-19 Rate meter (μR/hr)	9 – 10 μR/hr
Eberline ESP – 2 survey meter w/ Ludlum 44-9 G-M pancake probe	45 cpm
Ludlum model 8 survey meter w/ Ludlum 43-90 ZnS probe	1 cpm

Table 2: Contact Survey Data - Sept. 13, 1995:

Location and Wipe ID	cpm (ESP-2 w/44 - 9 G-M)	cpm (model - 18 w/ 43 - 90)	µR/hr (Ludlum M-19)
1	45	2	6 – 8
2	61	5	6 – 8
3	58	2	6 – 8
4	55	3	6 – 8
5	*	*	*
6	63	2	6 – 8
7	64	1	6 – 8
8	61	4	6 – 8
9	51	1	6 – 8
10	*	*	*
11	46	4	6 – 8
12	71	3	6 – 8
13	44	4	6 – 8
14	39	2	6 – 8
15	40	1	6 – 8
16	46	4	6 – 8
17	47	1	6 – 8
18	40	0	6 – 8
19	42	3	6 – 8
20	*	*	*
21	34	4	6 – 8
22	59	1	6 – 8

- Field blank sample swipe taken for QA/QC.

Table 3: Wipe Sample Net Measurements and Laboratory Results:

Location and Wipe ID	Net dpm (ESP-2 w/44-9)	Net dpm (model 18 w/ 43 - 90)	Gross Alpha pCi/100cm^2	Gross Beta pCi/100cm^2	Gamma pCi/100cm^2
1	4.6	0	@	N.D.	@
2	77.3	16.7	@	N.D.	@
3	63.6	0	@	N.D.	@
4	50.0	5.6	@	N.D.	@
5	*	*	@	N.D.	@
6	86.4	0	@	N.D.	@
7	90.9	-5.6	@	N.D.	@
8	77.3	11.1	@	N.D.	@
9	31.8	-5.6	N.D.	N.D.	
10	*	*	N.D.	N.D.	
11	9.1	11.1	N.D.	N.D.	
12	122.7	5.6	N.D.	N.D.	
13	0	11.1	N.D.	N.D.	
14	-22.7	0	N.D.	N.D.	
15	-18.2	-5.6	N.D.	N.D.	
16	9.1	11.1	N.D.	N.D.	
17	13.6	-5.6	N.D.	N.D.	
18	-18.2	-11.1	N.D.	N.D.	
19	-9.1	5.6	N.D.	N.D.	
20	*	*	N.D.	N.D.	
21	-45.5	11.1	N.D.	N.D.	
22	68.2	-5.6	N.D.	N.D.	
9 - 22	Composite gamma spectral analysis of samples				N.D.

Negative values indicate calculated numbers associated with measured levels that are below the background levels for the site.
Results less than the lower limit of detection are reported as not detected (N.D.)
@ Tritium analysis only for these swipe samples
* Blank swipe sample for QA/QC

Survey of Building T030: March 4, 1998

Survey Instruments:

Manufacture & Model	S/N	Probe/detector	S/N	Calibration date
Eberline ESP – 2	0406	44 - 9 G-M pancake	PR043314	12/3/97
Eberline ESP – 2	0406	44 - 10 NaI	PR038045	12/3/97
Ludlum model 18 analyzer	105775	44 - 9 G-M pancake	PR110029	11/12/97
Ludlum model 18 analyzer	105775	43 – 90 ZnS 100 cm^2	PR106316	11/12/97
Ludlum Micro R m-19	62583	Internal NaI	NA	5/14/97

Survey Report:

On March 4 1998, Roger Lupo of the Radiologic Health Branch revisited building T030. The building interior and exterior was surveyed with a Ludlum Micro R meter and a gamma scan performed with a 1x1 NaI probe attached to a Ludlum model 3 survey meter. The exposure rate measurement ranged from 8 to 10 μR per hour and the gamma scan yielded readings with a range of 2000 to 2500 counts per minute. No elevated levels were found. Direct measurements and swipe samples were taken at selected locations within the former accelerator room, the results are listed in Table 5. Figure 2 shows the locations of the samples and direct measurements.

Table 4: Background. Measurements

Measurements for background were taken at building T487.

Instrument	Reading	One sigma	Range
Ludlum M-19 Rate meter (μR/hr)	11 μR/hr	3.3 μR/hr	7.7 to 14.3 μR/hr
Ludlum model 3 survey meter w/ 1x1 NaI	2500 cpm	50 cpm	2450 to 2550 cpm
Ludlum model 18 survey meter w/ Ludlum 44-9 G-M pancake probe	50 cpm	7 cpm	43 to 57 cpm
Ludlum model-2221scaler/ratemeter w/ 2x2 NaI	3455 cpm	59 cpm	3396 to 3514 cpm

Table 5: Direct Measurements

Location and Swipe ID	cpm (ESP-2 w/44 - 9 G-M)	cpm (m - 2221 w/ 44 – 10)	μR/hr (Ludlum M-19)
1	50	3684	10
2	40	3052	10
3	70	3351	10
4	40	2858	8
5	70	3446	9.5
6	60	3604	10
7	70	3366	10

Table 6: Net Measurements and Laboratory Results

Location and Swipe ID	cpm (ESP-2 w/44 - 9 G-M)	cpm (m - 2221 w/ 44 – 10)	µR/hr (Ludlum M-19)	Laboratory analysis	Laboratory results
1	0	229	-1	Gross alpha Gross beta	N.D. N.D.
2	-10	-403	-1	Gross alpha Gross beta	N.D. N.D.
3	20	-104	-1	Gross alpha Gross beta	N.D. N.D.
4	-10	-597	-3	Gross alpha Gross beta	N.D. N.D.
5	20	-9	-1.5	Gross alpha Gross beta	N.D. N.D.
6	10	149	-1	Gross alpha Gross beta	N.D. N.D.
7	20	-89	-1	Gross alpha Gross beta	N.D. N.D.

Negative numbers indicate measurements below the background measurement.
Results less than the lower limit of detection are reported as not detected (N.D.)

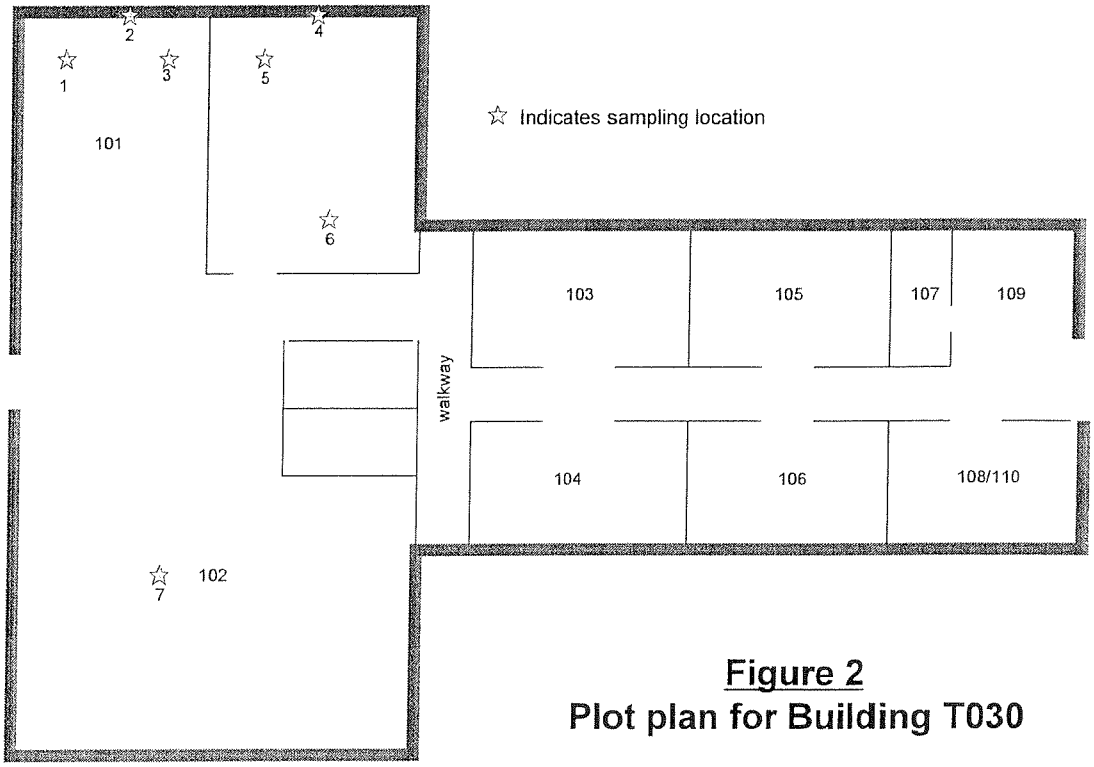

Figure 2
Plot plan for Building T030

Summary:

The survey results were within two sigma of the background for the structure and surrounding area. The results of the contact measurements and the laboratory analysis of the samples collected for building T030 have activity levels below the acceptable surface contamination levels listed in DECON-1 (Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use)

Prepared by: Roger K Lugo Date: 1-7-99

RADIOCHEMICAL ANALYSIS REPORT
State of California-Department of Health Services
Sanitation & Radiation Laboratory
2151 Berkeley Way
Berkeley, CA 94704

Date & Time Sampled	Serial No.
September 13, 1995	R 72335
Date Received	**Lab No.**
September 15, 1995	9890-95

Collector's Name: Mike Montes / Jeff Wong

Agency Address: Radiologic Health Branch
601 N. 7th. Strret
Sacramento, CA

Phone No.: 916-323-2780

Send Report To: Stephen Y. Hsu

Agency Address: Radiologic Health Branch
601 N. 7th. Strret
Sacramento, Ca

Phone No.: 8-492-4797

Sampling Point: ETEC
Location of Sample(s): Building 30, Wipes 9-22
System No. (ODW):

[X] RHB ( ) [ ] ODW ( ) [ ] EMB ( ) [ ] RWQCB ( )
[ ] FDB ( ) [ ] DWR ( ) [ ] CDFG ( ) [ ] County HD
[ ] Other (specify):

Type of Sample

[ ] Air Filters: Meter Date/Time	[ ] Drinking Water	[ ] Sewage/Sludge	[ ] Milk
Finishing: _____ ____/____	[ ] Groundwater	[ ] Sewage/Effuent	[ ] Fish/Shellfish
Starting: _____ ____/____	[ ] Surface Water	[ ] Soil/Sediment	[ ] NPP Influent/Eff
Net (M^3): _____	[ ] Sea Water	[ ] Vegetation	[ ] Seaweed
[ ] Air Charcoal Cartridge	[ ] Rain/Snow	[X] Wipes (14)	[ ] Composites
[ ] Radon Canister	[ ] Other (Specify)		

The analyses were performed using the referenced methods. Precision criteria for these methods were determined to be acceptable.

R No./SRL No.	Sample Identification	Analysis	Results[1] ± CE[2]	MDA_{95}[3]	Units
72335/9890	ETEC Building 30, #9-#22	Gamma[4]	N. D.	-----	pCi/14 wipes[5]
72335/9890	ETEC Building 30, #9	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #10	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #11	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #12	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #13	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #14	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #15	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #16	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #17	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #18	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe

72335/9890	ETEC Building 30, #19	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #20	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #21	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe
72335/9890	ETEC Building 30, #22	Gross Alpha[6]	N. D.	0.20	pCi/wipe
		Gross Beta[6]	N. D.	0.41	pCi/wipe

1. Results less than the Minimum Detectable Activity (MDA) are reported as not detected (N. D.).
2. CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
3. MDA_{95} is the sample specific minimum detectable activity at the 95% confidence level, which is the LLD_{95} divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD_{95} is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 18th ed., 1992, where S_b is the square root of the instrument background count rate.
4. HASL-300, 27th Ed., Vol. 1, Rev. 2/92, Method 4.5.2.3, Environmental Measurements Laboratory, U.S. Department of Energy, New York, NY.
5. All samples (14wipes) analyzed as a single batch.
6. Direct analysis using DOE RP710, DOE Methods for Evaluating Environmental and Waste Management Samples, DOE/EM-0089T, Rev 1, March 1993.

Violeta M. Soliman — Analyst/Radiochemist
10-23-95 — Date
Carolyn L. Wong — Lead Person/Supervisor
10/23/95 — Date

RADIOCHEMICAL ANALYSIS REPORT
State of California-Department of Health Services
Sanitation & Radiation Laboratory
2151 Berkeley Way
Berkeley, CA 94704

Date & Time Sampled	Serial No.
September 13, 1995 13:00	R 72334
Date Received	**Lab No.**
September 15, 1995	9891-95

Collector's Name: Jeff Wong & Mike Montes	Send Report To: Steve Hsu
Agency Address: Radiologic Health Branch 601 N. 7th St. Sacramento, CA.	Agency Address: Radiologic Health Branch 601 N. 7th St. Sacramento, CA.
Phone No.: 916-322-2780	Phone No.: 916-322-4797
Sampling Point: ETEC	[X] RHB ( ) [ ] ODW ( ) [ ] EMB ( ) [ ] RWQCB ( )
Location of Sample(s): Building 30 Wipes 1-8	[ ] FDB ( ) [ ] DWR ( ) [ ] CDFG ( ) [ ] County HD
System No. (ODW):	[ ] Other (specify): .

Type of Sample

[ ] Air Filters: Meter Date/Time	[ ] Drinking Water	[ ] Sewage/Sludge	[ ] Milk
Finishing: _____ ____/____	[ ] Groundwater	[ ] Sewage/Effuent	[ ] Fish/Shellfish
Starting: _____ ____/____	[ ] Surface Water	[ ] Soil/Sediment	[ ] NPP Influent/Eff
Net (M^3): _____	[ ] Sea Water	[ ] Vegetation	[ ] Seaweed
[ ] Air Charcoal Cartridge	[ ] Rain/Snow	[X] Wipes	[ ] Composites
[ ] Radon Canister	[ ] Other (Specify)		

Analyses were performed using the referenced methods. Laboratory Quality Control Criteria for these samples were acceptable

R No./SRL No.	Sample Identification	Analysis	Results[1] + CE[2]	MDA_{95}[3]	Units
72334/9891	# 1	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 2	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 3	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 4	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 5	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 6	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 7	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe
"	# 8	Total Beta(H-3)[4]	N. D.	3.4	pCi/Wipe

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1. Results less than the Minimum Detectable Activity (MDA) are reported as not detected(N.D).
2. CE is the Counting Error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
3. MDA_{95} is the sample specific minimum detectable activity at the 95% confidence level, which is the LLD^{95} divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD^{95} is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 1992, where S_b is the square root of the instrument background rate.
4. EPA Method 906.0, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-8-032, August 1980, modified for wipes. Liquid Scintillation Counter, H-3 efficiency.

Violeta M. Soliman — Analyst/Radiochemist — 10/5/95 — Date

Carolyn J. Way — Lead Person/Supervisor — 10/9/95 — Date

RADIOCHEMICAL ANALYSIS REPORT
State of California-Department of Health Services
Sanitation & Radiation Laboratory
2151 Berkeley Way
Berkeley, CA 94704

Date & Time Sampled	Serial No.
March 4, 1998 14:00	R 73100
Date Received	**Lab No.**
March 5, 1997	0382-98

Collector's Name: Roger Lupo	Send Report To: Steve Hsu
Agency Address: Radiologic Health Branch 601 N. 7th Street Sacramento, CA 95814	Agency Address: Radiologic Health Branch 601 N. 7th Street Sacramento, CA 95814
Phone No.: 916-324-3731	Phone No.: 916-322-4797
Sampling Point: ETEC T030	[X] RHB ( ) [ ] ODW ( ) [ ] EMB ( ) [ ] RWQCB ( )
Location of Sample(s): Wipes # 1 to # 7	[ ] FDB ( ) [ ] DWR ( ) [ ] CDFG ( ) [ ] County HD
System No. (ODW):	[ ] Other (specify):

Type of Sample

[ ] Air Filters: Meter Date/Time	[ ] Drinking Water	[ ] Sewage/Sludge	[ ] Milk
Finishing: _____ ____/____	[ ] Groundwater	[ ] Sewage/Effuent	[ ] Fish/Shellfish
Starting: _____ ____/____	[ ] Surface Water	[ ] Soil/Sediment	[ ] NPP Influent/Eff
Net (M^3): _____	[ ] Sea Water	[ ] Vegetation	[ ] Seaweed
[ ] Air Charcoal Cartridge	[ ] Rain/Snow	[X] Wipes	[ ] Composites
[ ] Radon Canister	[ ] Other (Specify)		

Analyses were performed using the referenced methods. Laboratory Quality Control Criteria for these samples were acceptable

R No./SRL No.	Sample Identification	Analysis	Results[1] + CE[2]	MDA_{95}[3]	Units
73100/0382-01	Wipe #1	Gross Alpha[4]	N. D.	0.17	pCi/Wipe
		Gross Beta[4]	N. D.	0.35	pCi/Wipe
73100/0382-02	Wipe #2	Gross Alpha[4]	N. D.	0.17	pCi/Wipe
		Gross Beta[4]	N. D.	0.35	pCi/Wipe
73100/0382-03	Wipe #3	Gross Alpha[4]	N. D.	0.17	pCi/Wipe
		Gross Beta[4]	N. D.	0.35	pCi/Wipe
73100/0382-04	Wipe #4	Gross Alpha[4]	N. D.	0.17	pCi/Wipe
		Gross Beta[4]	N. D.	0.35	pCi/Wipe
73100/0382-05	Wipe #5	Gross Alpha[4]	N. D.	0.19	pCi/Wipe
		Gross Beta[4]	N. D.	0.34	pCi/Wipe
73100/0382-06	Wipe #6	Gross Alpha[4]	N. D.	0.19	pCi/Wipe
		Gross Beta[4]	N. D.	0.34	pCi/Wipe
73100/0382-07	Wipe #7	Gross Alpha[4]	N. D.	0.19	pCi/Wipe
		Gross Beta[4]	N. D.	0.34	pCi/Wipe
73100/0382	Wipes #1 - # 7	Potassium-40[5]	10.2 ± 19.5	8.6	pCi/ 7 Wipes

1. Results less than the lower limit of detection are reported as not detected (N.D.).
2. CE is the Counting Error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
3. MDA_{95} is the sample specific minimum detectable activity at the 95% confidence level, which is the LLD_5 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD_5 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 1992, where Sb is the square root of the instrument background count rate.
4. EPA Method 900.0, Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-8-032, August 1980, modified for wipes.
5. EPA Method 901.1, Prescribed Procedures for Measurement of Radioactivity in Drinking water, EPA-600/4-8-032, August 1980, modified for wipes.

Victoria M. Soliman — Analyst/Radiochemist — 3-19-98 — Date

Carolyn J. Way — Lead Person/Supervisor — 3/19/98 — Date